

conductors in the diagrams, Figs. 1 and 2 actually do show nodes where connections are made, but these are very tiny. Also it is believed apparent that where a conductor "dead-ends" against another conductor there is a connection made between the two conductors. The accompanying replacement sheets bearing Figs. 1 and 2, nevertheless, more clearly show the connections now in a manner that will, it is believed, reproduce when the patent is printed. Fig. 3 was a rough, informal drawing, but did show the interconnections of conductors. A better Fig. 3 accompanies the letter to the draftsman. Figs. 4A and 4B actually showed the connecting nodes somewhat clearer than in Figs. 1 and 2, but again the figures have been revised to be certain that these will reproduce when the patent is printed. Again, in Fig. 5 the connections have been emphasized although very small nodes were on the original. Throughout the drawings, the borders have been removed and hand script entries have been replaced with more appropriate numbering and lettering.

Concerning the objection to the drawings in paragraph 2 of the Official Action, it is believed that claim 4 is, in fact, supported in the drawings. Note that in connection with Fig. 5, the "IGBT gate voltage potential is raised by the DRIVE output of the UPFC IC driving the charge pump circuit comprising  $d_3$ ,  $d_4$  and Cchg." This is shown in Fig. 5 where it is seen that the "gate driver" charge pump at the junction of  $d_3$   $d_4$  is connected through the capacitor Cchg to the DRIVE output of the controller UPFC 46. The "gate driver" charge pump is shown connected in driving relation to the gate of the Z1. This supports the claim 4 recitations.

Attorney for applicant was not entirely clear as to the drawing objection intended to be set forth in paragraph 2 of the Official Action, but believes that the foregoing is responsive. However, if attorney for applicant has misunderstood the examiner's intent here, the examiner is invited to call or e-mail the attorney for applicant at the telephone number and e-mail address listed below.

Claims 1 and 7 stand rejected as anticipated by the U.S. Patent No. 5,930,130 of Katyl et al. under 35 U.S.C. § 102(b). Katyl et al. shows an inrush current limiting circuit connected to a power factor correction circuit (PFC) of a power supply. The PFC, which is shown in Fig. 2, includes a controller being realized as an integrated circuit IC 14. The PFC controller 14 controls the MOSFET 17 by switching it ON and OFF alternately as a function of several inputs which include an input 21 for sensing the input voltage, an input 22 for sensing the output voltage, an input 23 for sensing the current through MOSFET 17 and an input 24 for sensing the

magnetic flux within inductor 15. The controller 14 is further connected to a frequency compensation capacitor 25'. The IC 14 is provided with power via a supply voltage 26 (col. 3, lines 34 – 48). Fig. 2 further shows the position of the inrush limiting circuit 27, which is depicted in Fig. 3C in more detail. To limit the inrush current through filter capacitor 32, a large resistance 30 is provided in series with the capacitor 32. A MOSFET transistor 31 is connected parallel to the resistance 30 while its gate is connected to the supply voltage 26. When the AC supply is switched on, the supply voltage 26 typically rises slowly so that the transistor 31 remains in the OFF state during the inrush interval (col. 4, lines 40 – 42). When supply voltage reaches a certain level, transistor 31 is switched ON thereby shorting the resistance 30 during normal operation of the power supply.

Turning to the claim rejections, a significant feature of the invention is that a single controller is used to perform power factor correction control and inrush limiting control. The examiner asserts that Katyl et al. disclose that the active PFC circuit and the inrush current control circuit are driven by the same controller. This is not the case. The PFC circuit comprises the controller 14 to control the power factor, but controller 14 is not used to control the inrush current limiter. The connection which the examiner probably interprets as a common control line is just the IC supply voltage 26. See Katyl et al., col. 3, lines 44-47. Therefore the invention is not anticipated by this reference.

However, current claim 1 has been given a clarifying amendment as set forth above so that now it requires "the inrush control circuit comprising at least one switch having a control element coupled to a control output of the controller." This is very different from Katyl et al. and the claim is believed patentable over Katyl et al.

When looking at Fig. 2 of the Katyl et al. reference, it can be seen that the inrush current control circuit 27 actually is coupled to the PFC controller 14 (via supply line 26). In order to clarify that a single controller is used to control PFC and inrush current limiting, claim 1 has been amended as set forth above. The current rejection over the Katyl et al. patent as anticipated by Katyl et al. should now be withdrawn, it is respectfully urged.

Claim 7 is a dependent claim including by its dependency all of the limitations of independent claim 1. For that reason, it is urged, claim 7 patently differs from the Katyl et al. patent.

The examiner rejects claims 2 through 6 as obvious over Katyl et al. under 35 U.S.C. § 103(a) in paragraph 6 of the Official Action. Claims 2 - 6, however, are dependent upon claim 1 and Katyl et al., like all other art of record, does not suggest the control as described above by a single controller. Without that, claims 2 through 6 patentably differ from Katyl et al. it is urged.

On page 4 of the Official Action, claims 8 through 11 and 13 through 22 are rejected as unpatentable over the Katyl et al. patent taken with the Bernstein et al. U.S. Patent No. 5,420,780 under 35 U.S.C. § 103(a). Concerning claim 8, this claim is dependent from claim 7 which in turn is dependent from claim 1. As previously stated, claim 1 patentably differs from Katyl et al. The Bernstein et al. patent does not teach modification of Katyl et al. to provide the control described above. Claim 8 should be allowable based upon its dependence from both claim 1 and claim 7.

Concerning method claim 9, this claim has been rejected over Katyl et al. and Bernstein et al. Neither Katyl et al. nor Bernstein et al. employ the step of "implementing the power factor control signal to actively control the inrush current." Again, as pointed out above, Katyl et al.'s filter and inrush suppression circuit 27, which is shown in greater detail in Fig. 3C, operates independently of the power factor correction IC 14. The IC supply voltage on lead 26 to the inrush suppression circuit 27 is indicative of input voltage and is not a power factor control signal. In Katyl et al. that signal is the signal sent to the gate of the MOSFET 17. The Katyl et al. and Bernstein et al. patents cannot be combined to provide what can be found in neither of the two patents and claim 9, it is urged, should be allowed at this time.

Claims 10, 11, 13 and 14 by their dependency include each of the steps of the method claim 9. Each, then, patentably differs over the combination of Katyl et al. and Bernstein et al. in the same manner as just described with respect to the parent claim 9.

Independent claim 15 stands rejected over the combination of Katyl et al. and Bernstein et al. as obvious under 35 U.S.C. § 103(a). As previously pointed out, however, neither Katyl et al. nor Bernstein et al. teach a controller controlling both the power factor correction control circuit and an active current limiting device as called for in claim 15. Again, the two patents to Katyl et al. and Bernstein et al. cannot be combined to provide what is nowhere taught or suggested in either of the two patents. Claim 15, it is urged, should be allowed at this time.

The remaining claims in the application, claims 16 through 22, contain by their dependency the relationship of the controller, power factor correction control circuit and active

current limiting device that distinguish claim 15 from the combination of Katyl et al. and Bernstein et al. These claims, then, should be allowed at this time.

By this response, no dedication to the public or relinquishment of subject matter is intended. Favorable reconsideration of the application at this time is earnestly solicited. Should the examiner have questions or suggestions, he is invited to call the undersigned attorney for applicant at the phone number or communicate by e-mail at the e-mail address, both listed below.

No extension of time or fee is believed necessary. However, the Commissioner is requested to grant any necessary extension and is authorized to charge any insufficiency or credit any overpayment to the deposit account number 070135 of attorneys for applicant. A duplicate copy of this page is enclosed.

Respectfully submitted,

**GALLAGHER & KENNEDY, P.A.**

Date: \_\_\_\_\_

8/23/02

By: \_\_\_\_\_



Thomas D. MacBlain  
Attorneys for Applicant  
Reg. No. 24,583

Gallagher & Kennedy, P.A.  
2575 East Camelback Road  
Phoenix, AZ 85016-9225  
(602) 530-8088  
[tdm@gknet.com](mailto:tdm@gknet.com)

**Version with Markings to Show Changes:**

1. (Twice Amended) A power supply circuit, the circuit comprising:  
an active power factor correction circuit, the active power factor correction circuit  
having a controller; and  
an inrush current control circuit, the inrush control circuit comprising at least one  
switch having a control element coupled to a control output of the controller.
4. (Amended) A power supply circuit as in claim 1 wherein the inrush current  
control circuit further comprises at least one gate driver [connectable] connected to the  
controller.